



PATENT
Attorney Docket No.: COOL-01301

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Thomas W. Kenny et al.

Serial No.: 10/680,584

Filed: October 6, 2003

For: **METHOD AND APPARATUS FOR
EFFICIENT VERTICAL FLUID
DELIVERY FOR COOLING A
HEAT PRODUCING DEVICE**

) Group Art Unit: 3753

) Examiner:

) **TRANSMITTAL LETTER**

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) Sunnyvale, CA 94086
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

Sir:

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Respectfully submitted,
HAVERSTOCK & OWENS LLP

Dated: 4-29-04

By: Thomas B. Haverstock

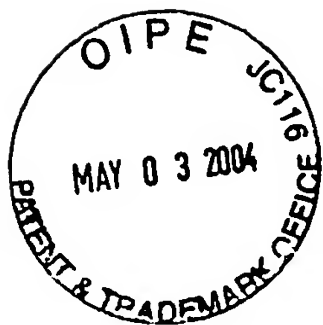
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Sir:

The citations listed below, copies attached, may be material to the examination of the above-identified application, and are therefore submitted in compliance with the duty of disclosure defined in 37 C.F.R. §§ 1.56 and 1.97. The Examiner is requested to make these citations of official record in this application.

United States Patents or Published Patent Applications have been filed electronically (EFS ID #59961); (EFS ID #59962); (EFS ID #59963) and (EFS ID #59964). Applicants have become aware of the following printed publication which may be material to the examination of this application:

- Chinese Publication No. CN 97212126.9;
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This Information Disclosure Statement under 37 C.F.R. §§ 1.56 and 1.97 is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that anyone or more of these citations constitutes prior art.

Respectfully submitted,
HAVERSTOCK & OWENS LLP

Dated: 4-29-04

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use Several Sheets If Necessary)				Applicants: Thomas W. Kenny et al.	
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	EG	Chad Harris et al., <u>Design and Fabrication of a Cross Flow Micro Heat Exchanger</u> , December 2000, Journal of Microelectromechanical Systems, Vol. 9, No. 4, pages 502-508.

Examiner:

Date Considered:

EXAMINER:

Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 (Modified)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No.: COOL-01301	Serial No.: 10/680,584
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use Several Sheets If Necessary)				Applicants: Thomas W. Kenny et al.	
(37 CFR § 1.98(b))				Filing Date: October 6, 2003	Group Art Unit: 3753
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)					
	EH	George M. Harpole et al., <u>MICRO-CHANNEL HEAT EXCHANGER OPTIMIZATION</u> , 1991, Seventh IEEE SEMI-THERM Symposium, pages 59-63.			
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	FB	Mali Mahalingam, <u>Thermal Management in Semiconductor Device Packaging</u> , 1985, Proceedings of the IEEE, Vol. 73, No. 9, September 1985, pages 1396-1404.			
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	FF	D. Jed Harrison et al., <u>Electroosmotic Pumping Within A Chemical Sensor System Integrated on Silicon</u> , Session C9 Chemical Sensors and Systems for Liquids, June 26, 1991, pages 792-795.			
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FK	M. Esashi, <u>Silicon micromachining and micromachines</u> , September 1, 1993, <i>Wear</i> , Vol. 168, No. 1-2, (1993), pages 181-187.		
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FM	Sarah Arunlanandam et al., <u>Liquid transport in rectangular microchannels by electroosmotic pumping</u> , 2000, <i>Colloids and Surfaces A: Physicochemical and Engineering Aspects</i> Vol. 161 (2000), pages 89-102.		
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FS	H. A. Goodman, <u>Data Processor Cooling With Connection To Maintain Flow Through Standby Pump</u> , December 1983, <i>IBM Technical Disclosure Bulletin</i> , Vol. 26, No. 7A, page 3325.		
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GH	Arel Weisberg et al., <u>Analysis of microchannels for integrated cooling</u> , 1992, <i>Int. J. Heat Mass Transfer</i> , Vol. 35, No. 10, pages 2465-2473.		
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GJ	B. X. Wang et al., <u>Experimental investigation on liquid forced-convection heat transfer through microchannels</u> , 1994, <i>Int. J. Heat Mass Transfer</i> , Vol. 37 Suppl. 1, pages 73-82.		
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OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)							
	GL	Gokturk Tune et al., <u>Heat transfer in rectangular microchannels</u> , 2002, Int. J. Heat Mass Transfer, 45 (2002), pages 765-773.					
	GM	D. B. Tuckerman et al., <u>High-Performance Heat Sinking for VLSI</u> , 1981, IEEE Electron Device Letters, Vol. EDL-2, No. 5, pages 126-129.					
	GN	Bengt Sunden et al., <u>An Overview of Fabrication Methods and Fluid Flow and Heat Transfer Characteristics of Micro Channels</u> , pages 3-23.					
	GO	David S. Shen et al., <u>Micro Heat Spreader Enhance Heat Transfer in MCMs</u> , 1995, IEEE Multi-Chip Module Conference, pages 189-194.					
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Electronic Version 1.1

Stylesheet Version v1.1.1

Title of Invention	METHOD AND APPARATUS FOR EFFICIENT VERTICAL FLUID DELIVERY FOR COOLING A HEAT PRODUCING DEVICE										
Submission Type:	Information Disclosure Statement										
Application Number:	10/680584	*10/680584*									
EFS ID:	59961										
Server Response:	<table border="1"><thead><tr><th>Confirmation Code</th><th>Message</th></tr></thead><tbody><tr><td>ISVR1</td><td>Submission was successfully submitted - Even if Informational or Warning Messages appear below, please do not resubmit this application</td></tr><tr><td>ICON1</td><td>5276</td></tr><tr><td>ISYSS</td><td>Filename= N/A BusinessRule= Validation System/Function Call Information. #Supporting Msg:Server unable to validate the Confirmaton/Application numbers at this time. They will be checked by PTO personnel later.</td></tr></tbody></table>		Confirmation Code	Message	ISVR1	Submission was successfully submitted - Even if Informational or Warning Messages appear below, please do not resubmit this application	ICON1	5276	ISYSS	Filename= N/A BusinessRule= Validation System/Function Call Information. #Supporting Msg:Server unable to validate the Confirmaton/Application numbers at this time. They will be checked by PTO personnel later.	
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ICON1	5276										
ISYSS	Filename= N/A BusinessRule= Validation System/Function Call Information. #Supporting Msg:Server unable to validate the Confirmaton/Application numbers at this time. They will be checked by PTO personnel later.										
First Named Applicant:	Thomas Kenny										
Attorney Docket Number:											
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TRANSMITTAL

Electronic Version v1.1
Stylesheet Version v1.1.0

Title of Invention	METHOD AND APPARATUS FOR EFFICIENT VERTICAL FLUID DELIVERY FOR COOLING A HEAT PRODUCING DEVICE						
Application Number:	10/680584 *10/680584*						
Date:	2003-10-06						
First Named Applicant:	Thomas W. Kenny						
Confirmation Number:	5276						
Attorney Docket Number:							
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Submitted by:	Elec. Sign.	Sign. Capacity					
Thomas B. Haverstock Registered Number: 32571	/tbh/	Attorney					

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Electronic Version v18

Stylesheet Version v18.0

Title of Invention	METHOD AND APPARATUS FOR EFFICIENT VERTICAL FLUID DELIVERY FOR COOLING A HEAT PRODUCING DEVICE						
Application Number:	10/680584 *10/680584*						
Confirmation Number:	5276						
First Named Applicant:	Thomas Kenny						
Attorney Docket Number:							
Search string:	(3654988 or 3817321 or 3823572 or 3923426 or 3929154 or 4109707 or 4138996 or 4194559 or 4248295 or 4312012 or 4450472 or 4485429 or 4516632 or 4540115 or 4561040 or 4567505 or 4573067 or 4664181 or 4758926 or 4866570 or 4868712 or 4894709 or 4896719 or 4908112 or 4938280 or 5009760 or 5016138 or 5057908 or 5058627 or 5070040 or 5083194 or 5088005 or 5096388 or 5099311 or 5099910 or 5125451 or 5131233 or 5203401 or 5218515 or 5219278 or 5232047 or 5239200 or 5263251 or 5274920 or 5308429 or 5309319 or 5317805 or 5325265 or 5336062 or 5380956).pn.						
US Patent Documents							
Note: Applicant is not required to submit a paper copy of cited US Patent Documents							
Init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
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Electronic Version v1.1
Stylesheet Version v1.1.0

Title of Invention	METHOD AND APPARATUS FOR EFFICIENT VERTICAL FLUID DELIVERY FOR COOLING A HEAT PRODUCING DEVICE						
Application Number:	10/680584 *10/680584*						
Date:	2003-10-06						
First Named Applicant:	Thomas W. Kenny						
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Confirmation Number:	5276						
First Named Applicant:	Thomas Kenny						
Attorney Docket Number:							
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	3	5427174	1995-06-27	Lomolino et al.			
	4	5436793	1995-07-25	Sanwo et al.			
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	6	5508234	1996-04-16	Dusablon, Sr. et al.			

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9	5544696	1996-08-13	Leland
10	5548605	1996-08-20	Benett et al.
11	5575929	1996-11-19	Yu et al.
12	5579828	1996-12-03	Reed et al.
13	5585069	1996-12-17	Zanzucchi et al.
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15	5692558	1997-12-02	Hamilton et al.
16	5696405	1997-12-09	Weld
17	5703536	1997-12-30	Davis et al.
18	5704416	1998-01-06	Larson et al.
19	5727618	1998-03-17	Mundinger et al.
20	5759014	1998-06-02	Van Untel
21	5763951	1998-06-09	Hamilton et al.
22	5774779	1998-06-30	Tuchinsky
23	5800690	1998-09-01	Chow et al.
24	5801442	1998-09-01	Hamilton et al.
25	5835345	1998-11-10	Staskus et al.
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27	5858188	1999-01-12	Soane et al.
28	5863708	1999-01-26	Zanzucchi et al.
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35	5901037	1999-05-04	Hamilton et al.
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37	5940270	1999-08-17	Puckett
38	5942093	1999-08-24	Rakestraw et al.
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44	5998240	1999-12-07	Hamilton et al.
45	6007309	1999-12-28	Hartley
46	6010316	2000-01-04	Haller et al.
47	6013164	2000-01-11	Paul et al.
48	6019882	2000-02-01	Paul et al.
49	6054034	2000-04-25	Soane et al.
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Stylesheet Version v1.1.1

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Stylesheet Version v18.0

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Signature

Examiner Name	Date

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Electronic Version 1.1

Stylesheet Version v1.1.1

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	5	6119729	2000-09-19	Oberholzer et al.			
	6	6126723	2000-10-03	Drost et al.			

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	7	6129145	2000-10-10	Yamamoto et al.	
	8	6129260	2000-10-10	Andrus et al.	
	9	6131650	2000-10-17	North et al.	
	10	6146103	2000-11-14	Lee et al.	
	11	6154363	2000-11-28	Chang	
	12	6159353	2000-12-12	West et al.	
	13	6171067	2001-01-09	Parce	B1
	14	6174675	2001-01-16	Chow et al.	B1
	15	6176962	2001-01-23	Soane et al.	B1
	16	6186660	2001-02-13	Kopf-Sill et al.	B1
	17	6210986	2001-04-03	Arnold et al.	B1
	18	6216343	2001-04-17	Leland et al.	B1
	19	6221226	2001-04-24	Kopf-Sill	B1
	20	6227809	2001-05-08	Forster et al.	B1
	21	6234240	2001-05-22	Cheon	B1
	22	6238538	2001-05-29	Parce et al.	B1
	23	6277257	2001-08-21	Paul et al.	B1
	24	6287440	2001-09-11	Arnold et al.	B1
	25	6301109	2001-10-09	Chu et al.	B1
	26	6313992	2001-11-06	Hildebrandt	B1
	27	6317326	2001-11-13	Vogel et al.	B1
	28	6321791	2001-11-27	Chow	B1
	29	6322753	2001-11-27	Lindberg et al.	B1
	30	6324058	2001-11-27	Hsiao	B1
	31	6337794	2002-01-08	Agonafer et al.	B1
	32	6351384	2002-02-26	Darkoku et al.	B1
	33	6388317	2002-05-14	Reese	B1
	34	6396706	2002-05-28	Wohlfarth	B1
	35	6400012	2002-06-04	Miller et al.	B1
	36	6406605	2002-06-18	Moles	B1
	37	6415860	2002-07-09	Kelly et al.	B1
	38	6416642	2002-07-09	Alajoki et al.	B1
	39	6417060	2002-07-09	Tavkhelidze et al.	B1
	40	6424531	2002-07-23	Bhatti et al.	B1
	41	6443222	2002-09-03	Yun et al.	B1

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	42	6444461	2002-09-03	Knapp et al.	B1
	43	6457515	2002-10-01	Vafai et al.	B1
	44	6495015	2002-12-17	Schoeniger et al.	B1
	45	6537437	2003-03-25	Galambos et al.	B1
	46	6543521	2003-04-08	Sato et al.	B1
	47	6553253	2003-04-22	Chang	B1
	48	6572749	2003-06-03	Paul et al.	B1
	49	6588498	2003-07-08	Reysin et al.	B1
	50	6591625	2003-07-15	Simon	B1
Signature					
Examiner Name			Date		

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